



READ AND SAVE THESE INSTRUCTIONS

INSTALLATION AND OPERATION MANUAL

Desiccant dryer
Condair **DA 4400-12000**

Humidification, Dehumidification
and Evaporative Cooling

 **condair**

Thank you for choosing Condair

Installation date (MM/DD/YYYY):

Commissioning date (MM/DD/YYYY):

Site:

Model:

Serial number:

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1 Introduction

1.1 Preface

We thank you for having purchased a Condair DA 4400-12000 desiccant dryer (for short: Condair DA).

The Condair DA desiccant dryers incorporate the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair DA desiccant dryer may result in danger to the user or third parties and/or damage to property.

To ensure a safe, proper, and economical operation of the Condair DA desiccant dryer, please observe and comply with all information and safety instructions contained in the present documentation as well as in the separate documentations of the components installed in the drying system.

If you have questions after reading this documentation, please contact your Condair representative. They will be glad to assist you.

1.2 Notes on the installation and operation manual

Limitation

The subject of this installation and operation manual are the Condair DA 4400-12000 desiccant dryers in their different versions. The various options and accessories are only described as is necessary for proper operation of the equipment. Further information on options and accessories can be obtained in the respective manuals.

This installation and operation manual is restricted to the **installation, commissioning, operation, maintenance and troubleshooting** of the Condair DA desiccant dryer and is meant for **well-trained personnel being sufficiently qualified for their respective work.**

Symbols used in this manual



The word "NOTE" used in conjunction with the hand symbol designates important notes in this manual that require special attention.



The word "CAUTION" used in conjunction with the caution symbol in the circle designates notes in this operation manual that, if neglected, may cause **damage and/or malfunction of the unit or other material assets**.



The word "WARNING" used in conjunction with the general caution symbol designates safety and danger notes in this operation manual that, if neglected, may cause to **injury to persons**.



The catchword "DANGER" used in conjunction with the general caution symbol designates safety and danger notes in this operation manual that, if neglected, may lead to **severe injury or even death of persons**.

Documentation control

Please keep this installation and operation manual in a safe place, where it can be immediately accessed. If the desiccant dryer changes hands, the documentation must be passed on to the new operator. If the documentation gets misplaced, please contact your Condair representative.

Language versions

This installation and operation manual is available in other languages. Please contact your Condair representative for information.

2 For your safety

General

Every person working with the Condair DA desiccant dryer must have read and understood this installation and operation manual before carrying out any work.

Knowing and understanding the contents of the installation and operation manual is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty operation, and to operate the unit safely and correctly.

All ideograms, signs and markings applied to the Condair DA desiccant dryer must be observed and kept in readable state.

Qualification of personnel

All work described in this installation and operation manual **may only be carried out by specialist who are well trained and adequately qualified and are authorized by the customer.**

For safety and warranty reasons any action beyond the scope of this manual must be carried out only by qualified personnel authorised by the manufacturer.

It is assumed that all persons working with the Condair DA desiccant dryer are familiar and comply with the appropriate regulations on work safety and the prevention of accidents.

The Condair DA desiccant dryer may not be used by persons (including children) with reduced physical, sensory or mental abilities or persons lacking experience and/or knowledge, unless they are supervised by a person responsible for their safety or they received instructions on how to operate the system. Children must be supervised to make sure that they do not play with the Condair DA desiccant dryer.

Intended use

The Condair DA 4400-12000 desiccant dryers are intended exclusively for **air dehumidification at atmospheric pressure** within the specified operating conditions (see [chapter 9.1](#)). Any other type of application, without the written consent of Condair, is considered as not conforming with the intended purpose and may lead to the Condair DA desiccant dryer becoming dangerous.

Operation of the equipment in the intended manner requires **that all the information contained in this installation and operation manual are observed (in particular the safety instructions).**

Danger that may arise from the Condair DA desiccant dryer



DANGER!

Danger of electric hazard!

The Condair DA desiccant dryer is mains powered. Live parts may be exposed when the unit is open. Touching live parts may cause severe injury or danger to life.

Prevention: Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.



WARNING!

Risk of injury!

Inside the Condair DA desiccant dryer there are moving parts present, which can cause serious injury to hands and fingers.

Prevention: Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.

Keep hands away from moving parts.



WARNING!

Risk of burns!

Inside the Condair DA desiccant dryer are heating element present, which can cause burns if touched.

Prevention: Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains), secure the unit against inadvertent power-up, **and wait at least 15 minutes prior to opening any service panel, allowing the heater to cool down.**

Warning signs attached to the unit

	General Warning Draws attention to a dangerous situation that can lead to injury or serious damage to health.
	Electric shock Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.
	Hot surfaces Hot surfaces inside the device. Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains), secure the unit against inadvertent power-up, and wait at least 15 minutes prior to opening any service panel, allowing the heater to cool down.
	Rotating fan blades Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains), secure the unit against inadvertent power-up. Keep hands or other body parts away from moving parts.

Correct lifting and handling

Lifting or handling of components always carries an element of risk, and therefore must only be carried out by trained and qualified personnel. Ensure that any lifting operations have been fully planned and risk assessed. All equipment should be checked by a skilled and competent health & safety representative. It is the customer's responsibility to ensure that operators are trained in handling heavy goods and to enforce the relevant lifting regulations.

Preventing unsafe operation

If it is suspected that **safe operation is no longer possible**, the Condair DA desiccant dryer should immediately **be shut down and secured against accidental power-up**. This can be the case under the following circumstances:

- if the Condair DA desiccant dryer is damaged
- if the electrical installations are damaged
- if the Condair DA desiccant dryer is no longer operating correctly

All persons working with the Condair DA desiccant dryer must report any alterations to the unit that may affect safety to the owner without delay.

Prohibited modifications to the unit

No modifications must be undertaken on the Condair DA 4400-12000 desiccant dryers without the express written consent of Condair.

For the replacement of defective components use exclusively **original accessories and spare parts available** from your Condair representative.



CAUTION!

The desiccant dryer must only be used for dehumidification of air at atmospheric pressure.

Never use the desiccant dryer without the filters as the desiccant rotor can become contaminated and lose capacity.

The desiccant dryer must not be installed in areas where explosion proof equipment is required.

3 Important notes

3.1 Inspection of the delivery

After receiving:

- Inspect shipping boxes for damage. Any damages of the shipping boxes must be reported to the shipping company.
- Check packing slip to ensure all parts has been delivered. All material shortages are to be reported to your Condair supplier within 48 hours after receipt of the goods. Condair assumes no responsibility for any material shortages beyond this period.
- Unpack the parts/components and check for any damage. If parts/components are damaged, notify the shipping company immediately.
- Check whether the components are suitable for installation on your site according to the model key stated on the type plate.

3.2 Storing/Transportation/Packaging

Storing

The Condair DA desiccant dryer must be stored in a weather-protected environment.

- Room temperature: -20°C to +60°C
- Room humidity: 0-90%RH (non condensing)

Transportation

Observe the following for transport or handling of the Condair DA desiccant dryer:

- The desiccant dryer should always stand upright on its feet.
- Never put other goods on top of the desiccant dryer.
- Transport and lift the desiccant dryer with a forklift. Ensure the forks are fully retracted to the rear end of the dryer before lifting.



WARNING!

It is the customer's responsibility to ensure that operators are trained in handling heavy goods and that the operators comply with the appropriate regulations on work safety and the prevention of accidents.

Packaging

Keep the original packaging of the components for later use. In case you wish to dispose of the packaging, observe the local regulations on waste disposal. Please recycle packaging where possible.

4 Product overview

4.1 Product designation

The product designation and the most important unit data are found on the specification label fixed on the right side below the operation panel (see example below):

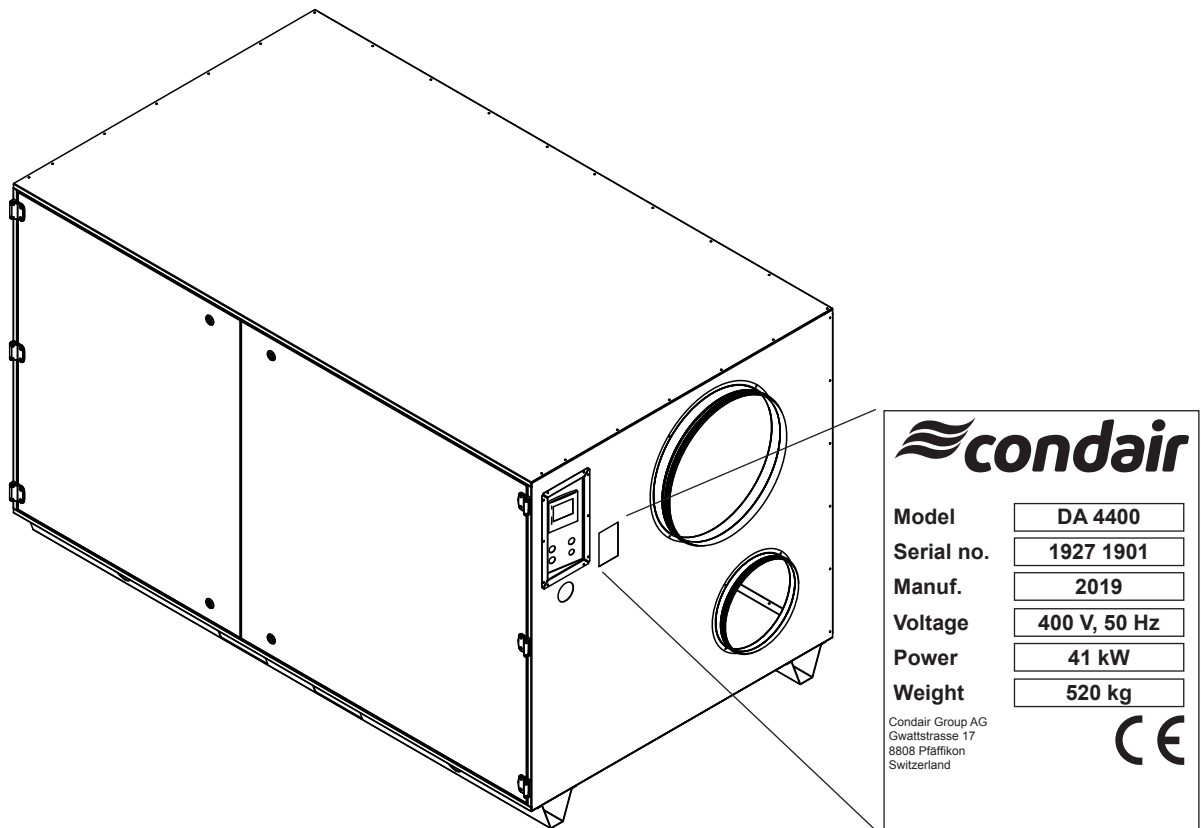


Fig. 1: Specification label

4.2 Applications

The Condair desiccant dryers are of the solid desiccant wheel type designed to dry air at atmospheric pressure.

The applications are numerous and widespread. Below are some examples:

- Controlling humidity levels in production processes.
- Drying of temperature sensitive products.
- Maintaining correct humidity in storage areas.
- Protection of equipment sensitive to corrosion.
- Controlling humidity levels in museums and archives.
- Climatic improvements in damp areas.
- Drying after water damage and building drying.

4.3 Method of operation

The desiccant dryer operates with two air streams. A larger air stream to be dehumidified, and a smaller air stream to exhaust the moisture out of the desiccant rotor. Two fans inside the desiccant dryer create air streams which travel through the desiccant rotor in opposite directions.

The larger air volume, the process air, passes through the slowly rotating silica gel rotor. Silica gel is a hygroscopic material adsorbing water vapour direct from the air. When passing through the rotor the humidity of the air is reduced, whilst the moisture content of the rotor material increases. On exiting the rotor the dried air is introduced into the area, or the process to be dehumidified. The adsorption process is effective at temperatures ranging from $-30\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$ and can be used at humidity levels of up to 100% RH.

The smaller air volume, the reactivation air, desorbs the moisture from the silica gel rotor. This reactivation air is heated by an internal heater to a temperature of approximately $+120\text{ }^{\circ}\text{C}$. As the reactivation air passes through the rotor, in an opposite direction to the dry air, it will decrease the moisture content of the rotor material. The reactivation air will leave the desiccant dryer as warm, moist air, which is then exhausted out from the building.

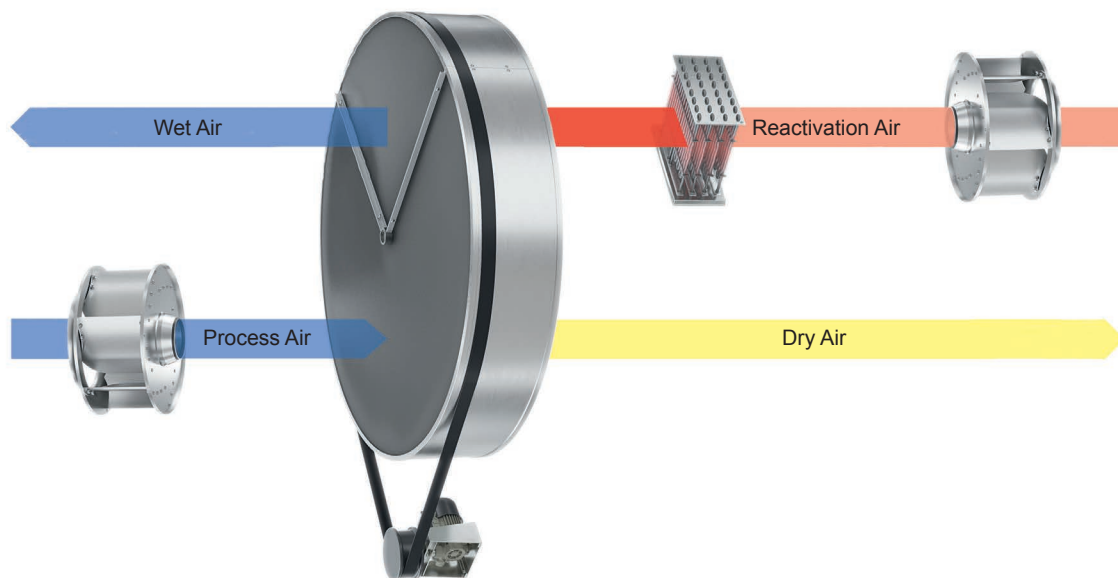


Fig. 2: Operation principle

4.4 Product description

The Condair DA desiccant dryers with applied ducting and without special modifications meet the requirements of IEC protective class IP23.

4.4.1 Casing

The RAL9006 powder-coated, double-walled housing is made of 1 mm thick Magnelis® sheet metal and filled with 30 mm of non-combustible mineral wool insulation, including inner panels. The sound- and heat-insulated construction with seals on the panel avoids thermal bridges and achieves a high level of tightness. The maintenance-friendly design allows easy access to the internal components via two service doors on the front of the unit. All duct connections are prepared for the connection of standard spiral- or rectangular ducts.

4.4.2 Rotor

The desiccant dryer has a drying rotor fabricated from 82% desiccant material, 16% fibreglass and 2% bonding sealant. The rotor has a matrix of corrugated and flat heat resistant sheets, which houses the Silica Gel desiccant agent. This matrix creates a large number of axial flutes through the rotor, which together builds up an immense surface area for moisture adsorption in a small volume. The rotor is manufactured and processed to be able to withstand moisture-saturated air without being damaged. Furthermore, the rotor will not be damaged even if the fan or the heater for reactivation should fail during operation. The desiccant rotor is tested according to ASTM E84-18b, and the results are Flame Spread Index (FSI) 0 and Smoke Developed Index (SDI) 0.

Rotor sealings

The rotor has two peripheral seals (Silicone/PTFE) on the rotor casing and four radial seals (PTFE).

Rotor drive system

An electrical gear motor and a belt drive achieve the slow rotation of the rotor. The belt sits on the outer rim of the rotor and is driven by a pulley on the drive motor. A belt tension device keeps the belt in place and maintains tension to prevent belt slip. Correct operation of the drive system, and direction of rotation can be checked by opening the front panel.

The centre hub of the rotor is equipped with ball bearings. The rotor shaft is made from stainless steel.

4.4.3 Filters

For both air flows, the desiccant dryer is equipped with two separate air filters as standard. These are located at the respective air inlets and primarily serve to protect the components installed in the unit.

4.4.4 Fans for process- and reactivation air

The device is equipped with directly driven EC-centrifugal fans, IP54 and ISO F, installed in the device. The exact type can be found in the respective table in [chapter 11](#).

4.4.5 Heater for reactivation air

The electrical reactivation heater is divided in three steps. The heater is equipped with over temperature protection.

For stepless modulation of the dehumidification capacity, the unit can optionally be equipped with a solid-state relay (SSR).

Optionally, the desiccant dryer can also be equipped with alternative thermal sources, e.g. steam-, hot water-coil, or a combination of two different sources (e.g. hot water-coil and electric). Please contact your Condair representative if necessary.

4.4.6 Over-temperature protection

The desiccant dryer is equipped with a dual over-temperature protection system.

The regeneration thermostat (OH1) measures the air temperature between the heating element and the rotor. It is an adjustable thermostat located above the rotor (standard range 120 °C to 150 °C). If OH1 is triggered, the regeneration heater is shut off to prevent OH2 from being activated.

Two high-temperature thermostats (OH2) are installed in the regeneration heater. If triggered, they shut down the entire unit (activation temperature 250 °C). Both thermostats must be reset manually.

4.4.7 Electrical panel

The electronical panel ist located in a separate compartment behind der servicedoor of the desiccant dryer. Switches and the PLC display are located on the right side of the desiccant dryer.

4.4.8 Operation Options

For desiccant dryers with PLC, the operation is described in the PLC controller manual.

5 Installation

5.1 Installation and service access

The Condair desiccant dryer is as standard designed for indoor installation, and must be installed in horizontal position on its feet, preferably bolted to the floor.

The ambient conditions at the place of installation should be within the range:

- Room temperature: 0-40°C for standard units
- Room humidity: 0-90%RH for standard units

Ensure a space of 1250 mm in front of the desiccant dryer for inspection and service.

5.2 Duct connection for permanent installation

The Condair DA 4400-12000 desiccant dryers can be installed in the room that should be dehumidified or in a separate room.

To obtain the best performance the outlets from the fans should be equipped with diffusers.

5.2.1 Wet air duct from the desiccant dryer

The wet air from the desiccant dryer should be exhausted to the outside. The duct should be as short as possible to minimize the chance of condensation of the wet air. This duct should slope down in angle of at least $>2^\circ$, to stop any condensed water from flowing back into the desiccant dryer. If the wet air duct is extremely long, or must be installed sloping upwards from the desiccant dryer, it should have a drainage point ($\varnothing 2-4$ mm) drilled at its lowest position.

Since there is a risk that the wet air temperature could exceed $+80^\circ\text{C}$, it is recommended to insulate the wet air duct system and appropriate warning signs should be placed at the wet air outlet duct.

The exhaust opening should have a coarse wire net.

5.2.2 Reactivation air into the desiccant dryer

The reactivation air duct into the desiccant dryer should be as short as possible. The intake opening of the duct should have a coarse wire net, to stop foreign objects from entering the desiccant dryer. Insulation is normally not needed and the duct can slope up- or downwards. In some installations, as an alternative, the reactivation air can be taken from the installation room. For this alternative no duct connection is needed.

The reactivation air volume is controlled by a damper in the inlet duct of the regeneration air. The air volume must be measured during commissioning and the damper adjusted accordingly. For a solution with a speed-controlled fan, please contact your Condair representative (see also installation schematics in [chapter 5.2.5](#)).

5.2.3 Process- and dry air with the desiccant dryer installed in the dehumidified room

When the desiccant dryer is installed in the dehumidified room space it would normally take the process air direct from the room without any duct system, with only a protection net for the inlet required. The dry air outlet would normally have a duct system designed for distribution of the dry air in the building.

5.2.4 Process- and dry air with the desiccant dryer installed outside the dehumidified room

When the desiccant dryer is installed in a separate plant room all inlet and outlet openings are usually ducted.

The desiccant dryer takes the process air as ambient air, or as pre-treated air from an HVAC, or alternatively as return air from the dehumidified room. The dry air from the desiccant dryer can be connected for post-treatment or ducted back to the dehumidified room, e.g. post cooler or filter.

A damper can be installed in the process air inlet duct, enabling correct commissioning of the dry air volume. For a solution with a speed-controlled fan, please contact your Condair representative.

5.2.5 Installation schematics

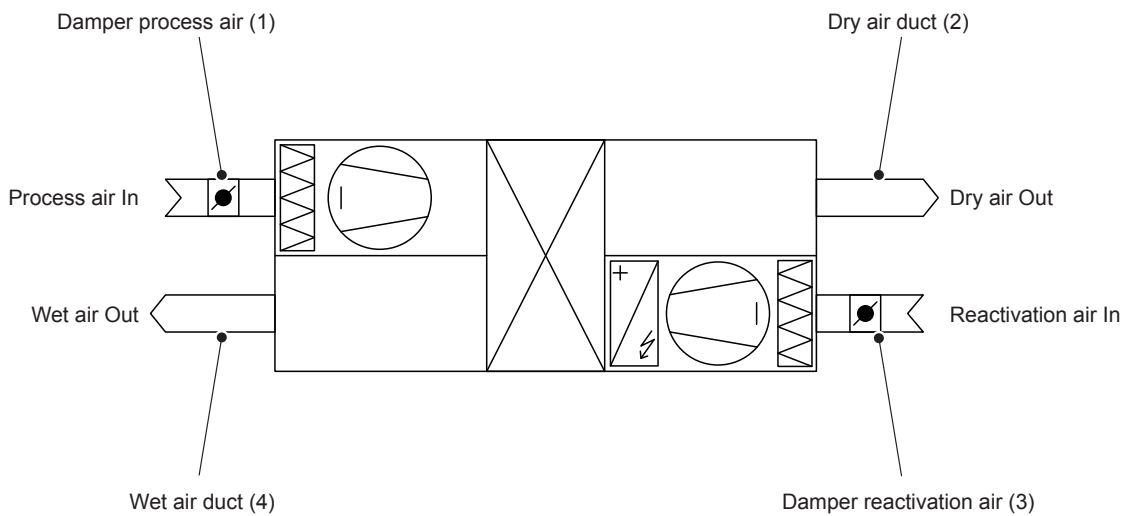


Fig. 3: Installation schematics

- 1 **Damper for Process air:** To adjust the airflow to the required value during commissioning, the air needs to be adjusted manually with a damper, which is installed at the process air inlet. The process inlet air damper is not required if the system is fitted with fan speed control option.
- 2 **Dry air duct:** The ducts should be selected to have the minimum possible pressure drop (check available external pressure range in the manual), also to prevent unnecessary positive pressure building up in the dry air chamber inside the unit.
- 3 **Damper for reactivation air:** To adjust the airflow to the required value during commissioning; the air needs to be adjusted manually to the datasheet-value with a damper. The process inlet air damper is not required if the system is fitted with fan speed control option.
- 4 **Wet Air Duct:** The wet air duct should be insulated and the ducts should be selected to have the minimum possible pressure drop (check available ext. pressure). In this duct, there is a risk of condensation. To prevent a collection of condensate, this duct should slope down in angle of at least $>2^\circ$ or has a condensate drain on its lowest point (drill hole).

5.3 Electrical installation

See [Appendix 1 – electrical wiring diagram](#).

6 Commissioning

On initial start-up, the following steps should be taken in this order:

1. Ensure that the external isolation switch is isolating the unit from the mains and that the main switch on the desiccant dryer is set in the OFF position.
2. Open the service panel of the desiccant dryer and ensure that no foreign objects are left inside the unit or in the electrical compartment.
3. Ensure that the process and reactivation air dampers (if any) are open, and that ducts are clean and free of blockages.
4. Check that air filters are installed and clean.
5. Access the fan chambers by removing the panels/safety grids, rotate the fan impellers by hand and make sure they can move freely. After checking the fans, mount the service panels/safety grids back on the unit.
6. Ensure that the mains supply fuse is suitably rated.
7. Mount the main service panel on the desiccant dryer.
8. Connect the desiccant dryer to the main electrical supply by turning the isolation switch to ON, and check all three phases are live. Terminal L1, L2, L3 in the desiccant dryer.
9. Check to see that the lamp on the PLC called STAND BY is lighting up, but that the machine doesn't start.
10. Start the desiccant dryer for a short moment (approx. 1 minute) by turning the switch on the PLC to the ON respectively MAN position or by pressing "unit on" and "Manuel / Auto" on the PLC. Check that there is no apparent vibration while the fans are ramping up to full speed. Also check that the green operation lamp on the PLC lights up.
11. Stop the desiccant dryer by turning the ON/OFF switch on the PLC to OFF.
12. The reactivation air fan will continue to work for 6 minutes after the unit has been turned OFF on the PLC.
13. The desiccant dryer is now ready for operation.
14. Start the desiccant dryer and check that the unit is operating at the correct air volumes and air pressures by taking measurements in the dry air and wet air ducts.
15. If requested check the dehumidification performance by measuring humidity in the dry air outlet from the desiccant dryer. Compare the result with the performance charts.

7 Maintenance

7.1 Important notes on maintenance

Qualification of personnel

All maintenance work must be carried out only by well qualified and trained personnel authorised by the owner. It is the owner's responsibility to verify proper qualification of the personnel.

General note

The instructions and details for maintenance work must be followed and upheld.

Only the maintenance work described in this documentation may be carried out.

Only use original Condair spare parts to replace faulty parts.

Safety

Some maintenance work requires removal of the unit covers. Please note the following:



DANGER!
Danger of electric hazard!

The Condair DA desiccant dryer is mains powered. Live parts may be exposed when the unit is open. Touching live parts may cause severe injury or danger to life.

Prevention: Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.



WARNING!
Risk of injury!

Inside the Condair DA desiccant dryer there are moving parts present, which can cause serious injury to hands and fingers.

Prevention: Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.

Keep hands or other body parts away from moving parts.



WARNING!
Risk of burns!

Inside the Condair DA desiccant dryer are heating element present, which can cause burns if touched.

Prevention: Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains), secure the unit against inadvertent power-up, **and wait at least 15 minutes prior to opening any service panel, allowing the heater to cool down.**

The maintenance intervals for the desiccant dryer depend on the surrounding environment and installation site. Recommended maintenance intervals could therefore differ from one installation to another. Incorrect maintenance and service may result in reduced dehumidification capacity.

7.2 Filters

The desiccant dryer is equipped with two separate filter banks, one for the process air and the other for the reactivation air. The filters are positioned at the respective inlets and will clean the air prior to entering the desiccant dryer.

Intervals for cleaning or replacement of the filters will be determined by the amount of dust and particles in the air at the installation site.

We recommend that the filters are checked at least once a month. There is a service alarm in the PLC that will be activated after a certain period of time in order to ensure that filters are checked regularly.

The unit can be equipped with differential pressure measurement for checking the pressure drop over the filters.



CAUTION!

Never operate the desiccant dryer without the filters, as the rotor can be damaged by dust.

7.3 Rotor

The rotor is maintenance free. However should it be necessary to clean the rotor the first choice should be careful use of compressed air. With severe contamination, the rotor can be washed with water.

Cleaning with water is no routine matter; please contact your Condair representative.

Check the rotor bearing and the rotor surface once a year.

The DA 4400-12000 desiccant dryers can be equipped with inductive rotor guard as an option (standard for units with PLC).



CAUTION!

Airborne chemical compounds, e.g. oily vapors or solvents can also be adsorbed by the rotor and permanently reduces its capacity.



NOTE!

Due to the effects of heat during the reactivation process, the white color of the desiccant rotor changes to beige or brownish over time. This is normal and does not affect rotor performance.

7.4 Electrical motors

The electrical motors are equipped with ball bearings. The bearings are designed to last the life of the motor and therefore no maintenance is required.

Check the motors once a year for any abnormal sound.

7.5 Heater

The reactivation electric heater does not need maintenance, but should be checked twice a year for any mechanical damage to the heating elements.

The over temperature thermostat OH1 can be turned down while the unit is in operation in order to verify that the thermostat turns off all heating steps.

7.6 Rotor drive belt

Check the belt tensioning at regular intervals. The tensioning is maintained constantly by the belt tension device, and should not need to be adjusted during normal operation. Please note that the belt tensioning should not be too tight as this can damage the drive motor.

7.7 Rotor seals

Check that the seals are in the right position and not damaged. There is a service alarm in the PLC that will be activated after certain period in order to ensure that the rotor seals are checked regularly.

7.8 General summary of maintenance intervals

	Filter	Rotor bearing	Motors	Rotor drive	Heater	Seals
As required	x					
Every 6th month				x	x	x
Every 12th month		x	x			

8 Troubleshooting

Malfunction	Possible cause of trouble	Corrective action
None, or reduced dehumidification capacity	Filter dirty.	Clean or replace filters.
	Electrical heater faulty.	Check fuses.
	Airflow reduced.	Check openings and dampers.
	No rotation of rotor.	Check belt tensioning or PLC alarms.
	Internal leakage in unit.	Check seals and springs. Check internal pressures for unfavourable pressure situations. (target: Pa process air \geq Pa re-activation air).
	Altered air volumes.	Measure and check air volumes.
	Altered reactivation temperature.	Check reactivation heater.
	Air leakage.	Check panels and check seals.
Circuit breaker or fuse faulty	Fan faulty.	Check fans and motors.
	Too large air volume.	Check air volumes and dampers.
	Rotor does not rotate.	Check drive motor and drive belt.
	Reactivation heater faulty.	Check reactivation heater.
Desiccant dryer does not start	No control circuit.	Check control fuses.
	Faulty control signal.	Check external start/stop signal
	Phase fault.	Check main fuses.
	Fuse for controls faulty.	Check electrical components.
Rotor does not rotate	Drive belt is slipping.	Check belt tensioning.
	Drive belt broken or worn.	Replace drive belt.
	Rotor jammed.	Check centre shaft, rim of rotor.
	Drive motor faulty.	Replace complete gear motor.
No dry or wet air volume	Filter dirty.	Clean or replace filters.
	Fan faulty.	Check fan, motor and impeller.
	Phase fault.	Check main fuses and phase sequence.
	Ducts blocked.	Check dampers and ducts.

9 Product specification

9.1 Technical data

		DA 4400	DA 6400	DA 7400	DA 9400	DA 12000
Drying capacity at 20 °C - 60% RH	kg/h	28.0	36.5	45.0	54.0	63.0
Nominal process air flow	m³/h	4400	6400	7400	9400	12000
Nominal regeneration air flow	m³/h	1200	1600	2250	2500	2500
Nominal ext. pressure process air	Pa	500	200	600	200	200
Nominal ext. pressure regeneration air	Pa	300	200	300	300	300
Electrical connected load	kW	41.0	53.0	66.7	78.0	94.2
Electrical load - reactivation heat register	kW	36	48	60	72	84
Operation range - temperature ¹⁾	°C	0 - 40				
Operation range - humidity	%rH	0 - 100				
Power supply ²⁾	V/Ph/Hz	400/3/50				
Connection dimensions process air	mm	ø630				H x W 1100 x 700
Connection dimensions dry air	mm	ø500				H x W 800 x 500
Connection diameter regeneration air	mm	ø315				
Connection diameter wet air	mm	ø315				
Filter class process air ³⁾		ISO Coarse 65 %				
Filter class regeneration air ³⁾		ISO Coarse 65 %				
Dimensions (H x W x D)	mm	1311 x 2326 x 1297				1311 x 2263 x 1297
Sound pressure level ⁴⁾	dB(A)	72				
Weight	kg	520	520	550	550	550

¹⁾ At temperatures below 0 °C, modifications may be required depending on the installation conditions. Please contact your Condair representative.

²⁾ Deviating voltages and frequencies available on request.

³⁾ Classification according to DIN ISO 16890

⁴⁾ Sound pressure level measured at 2 m distance from the unit surface, with 3 m of connected air ducts



NOTE!

Valid only for standard units, with standard fans, air-flows and standard reactivation heat power.

9.2 Dimensions DA 4400-9400

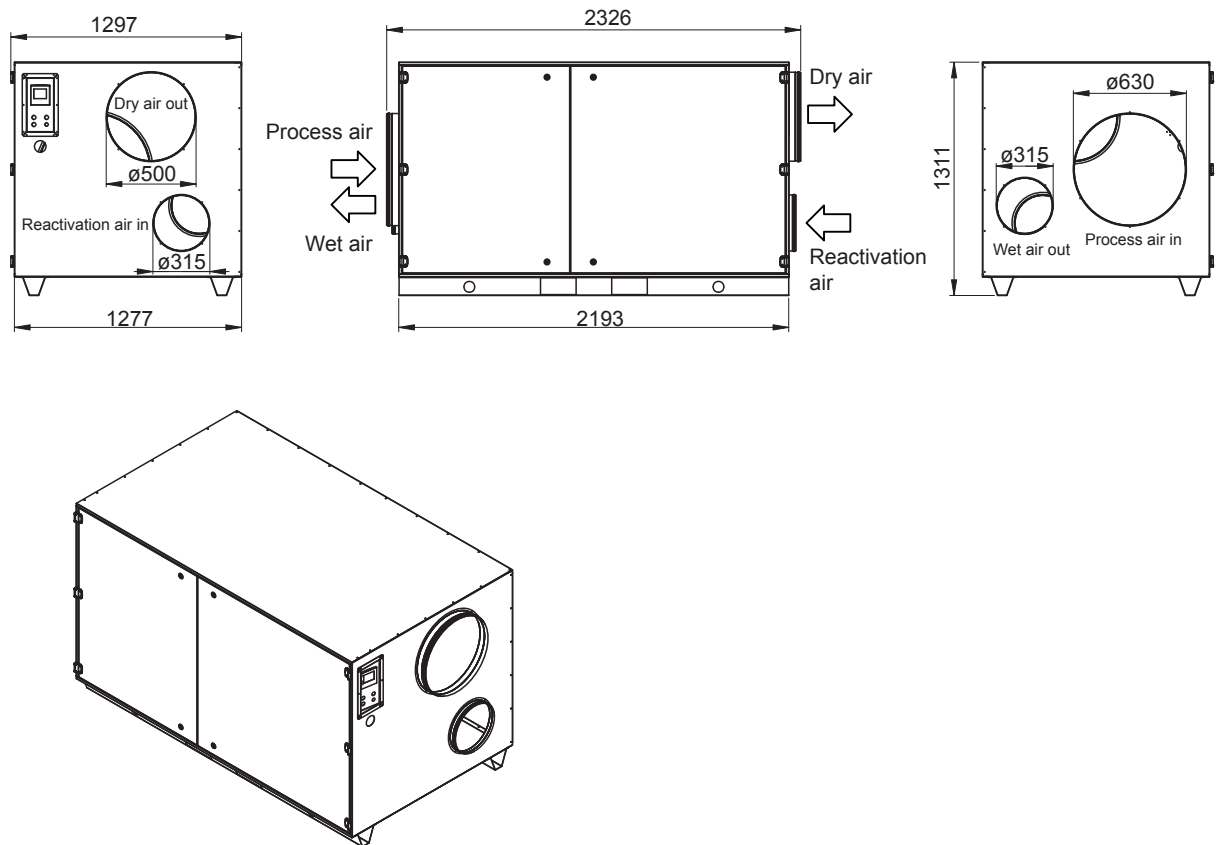


Fig. 4: Dimensions DA 4400-9400

9.3 Dimensions DA 12000

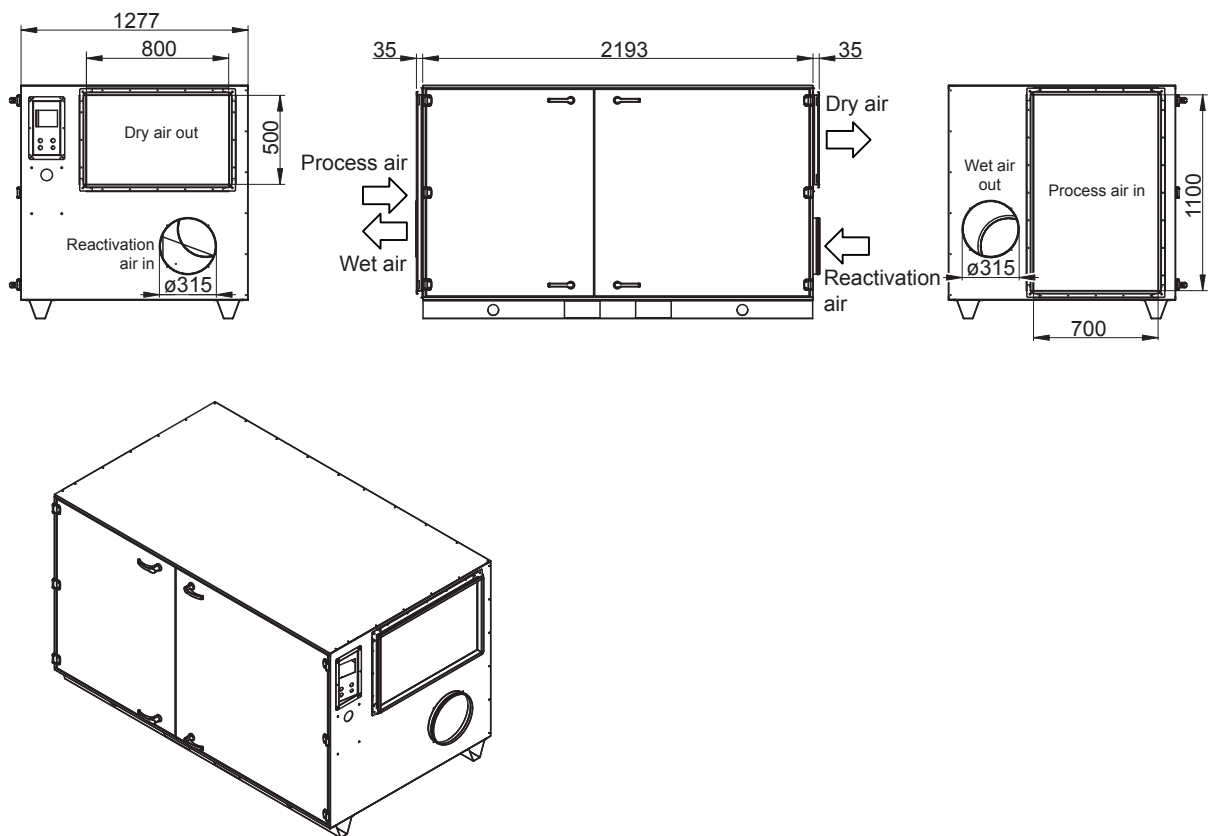


Fig. 5: Dimensions DA 12000

10 Spare parts

10.1 Spare parts Condair DA 4400

Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
Drive motor incl. gear box DA 4400	2597816	Rotek SGM65-30-4, 3 rpm	1	1
Capacitor for drive motor DA 4400	2597817	0.5 µF 630 V	1	
Belt Pulley DA 4400	2597874	22 8M20	1	
Drive belt DA 4400	2597821	HTD 3048 8M20	1	
Belt Tensioner DA 4400	2596156	Rosta SE11+ RE11	1	
Process Air fan DA 4400	2597862	GR31C-ZID.DG.CR 3.9 kW	1	
Reactivation air fan DA 4400	2597861	R3G250-RR01-H1 0.5 kW	1	
Heater rod DA 4400	2597841	Loval OY 71381, 4000 W	9	1
Rotor DA 4400	2597804	Rotor DA 4400	1	
Process air filter DA 4400	2597872	810 x 565x 48 mm	2	4
Reactivation air filter DA 4400	2597873	650 x 535 x 48 mm	1	2
Peripheral seal DA 4400	2597829	PTFE/Silicone 3000 mm	2	
Clamp for peripheral seal DA 4400	2597830	Hose clamp 3000 mm	2	
Radial seal DA 4400	2597831	PTFE 450 mm	4	
Overheat protection OH1 DA 4400	2597846		2	
Overheat protection OH2 DA 4400	2597845		1	
Rotation guard sensor DA 4400 with magnet	2597875		1	
Standard PLC 3.5" (spare part) incl standard software	2597879		1	

10.2 Spare parts Condair DA 6400

Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
Drive motor incl. gear box DA 6400	2597816	Rotek SGM65-30-4, 3 rpm	1	1
Capacitor for drive motor DA 6400	2597817	0.5 µF 630 V	1	
Belt Pulley DA 6400	2597874	22 8M20	1	
Drive belt DA 6400	2597821	HTD 3048 8M20	1	
Belt Tensioner DA 6400	2596156	Rosta SE11+ RE11	1	
Process Air fan DA 6400	2597863	GR40C-ZID.GG.CR, 3.9 kW	1	
Reactivation air fan DA 6400	2597859	R3G280-AU11-C1	1	
Heater rod DA 6400	2597841	Loval OY 71381, 4000 W	12	1
Rotor DA 6400	2597804	Rotor DA 6400	1	
Process air filter DA 6400	2597872	810 x 565 x 48 mm	2	4
Reactivation air filter DA 6400	2597873	650 x 535 x 48 mm	1	2
Peripheral seal DA 6400	2597829	PTFE/Silicone 3000 mm	2	
Clamp for peripheral seal DA 6400	2597830	Hose clamp 3000 mm	2	
Radial seal DA 6400	2597831	PTFE 450 mm	4	
Overheat protection OH1 DA 6400	2597846		2	
Overheat protection OH2 DA 6400	2597845		1	
Rotation guard sensor DA 6400 with magnet	2597875		1	
Standard PLC 3.5" (spare part) incl standard software	2597879		1	

10.3 Spare parts Condair DA 7400

Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
Drive motor incl. gear box DA 7400	2597816	Rotek SGM65-30-4, 3 rpm	1	1
Capacitor for drive motor DA 7400	2597817	0.5 µF 630 V	1	
Belt Pulley DA 7400	2598621	28 8M20	1	
Drive belt DA 7400	2598620	HTD 3600 8M20	1	
Belt Tensioner DA 7400	2596156	Rosta SE11+ RE11	1	
Process Air fan DA 7400	2597864	GR50C-ZID.GQ.CR 5.6 kW	1	
Reactivation air fan DA 7400	2597860	GR31C-ZID.DC.1R 2.2 kW	1	
Heater rod DA 7400	2597841	Loval OY 71381, 4000 W	15	1
Rotor DA 7400	2597805	Rotor DA 7400	1	
Process air filter DA 7400	2597872	810 x 565x 48 mm	2	4
Reactivation air filter DA 7400	2597873	650 x 535 x 48 mm	1	2
Peripheral seal DA 7400	2598622	PTFE/Silicone 3500 mm	2	
Clamp for peripheral seal DA 7400	2598623	Hose clamp 3500 mm	2	
Radial seal DA 7400	2598624	PTFE 550 mm	4	
Overheat protection OH1 DA 7400	2597846		2	
Overheat protection OH2 DA 7400	2597845		1	
Rotation guard sensor DA 7400 with magnet	2597875		1	
Standard PLC 3.5" (spare part) incl standard software	2597879		1	

10.4 Spare parts Condair DA 9400

Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
Drive motor incl. gear box DA 9400	2597816	Rotek SGM65-30-4, 3 rpm	1	1
Capacitor for drive motor DA 9400	2597817	0.5 µF 630 V	1	
Belt Pulley DA 9400	2598621	28 8M20	1	
Drive belt DA 9400	2598620	HTD 3600 8M20	1	
Belt Tensioner DA 9400	2596156	Rosta SE11+ RE11	1	
Process Air fan DA 9400	2597864	GR50C-ZID.GQ.CR 5.6 kW	1	
Reactivation air fan DA 9400	2597860	GR31C-ZID.DC.1R 2.2 kW	1	
Heater rod DA 9400	2597841	Loval OY 71381, 4000 W	18	1
Rotor DA 9400	2597805	Rotor DA 9400	1	
Process air filter DA 9400	2597872	810 x 565 x 48 mm	2	4
Reactivation air filter DA 9400	2597873	650 x 535 x 48 mm	1	2
Peripheral seal DA 9400	2598622	PTFE/Silicone 3500 mm	2	
Clamp for peripheral seal DA 9400	2598623	Hose clamp 3500 mm	2	
Radial seal DA 9400	2598624	PTFE 550 mm	4	
Overheat protection OH1 DA 9400	2597846		2	
Overheat protection OH2 DA 9400	2597845		1	
Rotation guard sensor with magnet DA 9400	2597875		1	
Standard PLC 3.5" (spare part) incl.standard software	2597879		1	

10.5 Spare parts Condair DA 12000

Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
Drive motor incl. gear box DA 12000	2597816	Rotek SGM65-30-4, 3 rpm	1	1
Capacitor for drive motor DA 12000	2597817	0,5 µF 630 V	1	
Belt Pulley DA 12000	2598621	28 8M20	1	
Drive belt DA 12000	2598620	HTD 3600 8M20	1	
Belt Tensioner DA 12000	2596156	Rosta SE11+ RE11	1	
Process Air fan DA 12000	2597863	GR40C-ZID.GG.CR, 3.9 kW	2	
Reactivation air fan DA 12000	2597860	GR31C-ZID.DC.1R 2.2 kW	1	
Heater rod DA 12000	2597841	Loval OY 71381, 4000 W	18	1
Rotor DA 12000	2597805	Rotor DA 12000	1	
Process air filter DA 12000	2597872	810 x 565 x 48 mm	2	4
Reactivation air filter DA 12000	2597873	650 x 535 x 48 mm	1	2
Peripheral seal DA 12000	2598622	PTFE/Silicone 3500 mm	2	
Clamp for peripheral seal DA 12000	2598623	Hose clamp 3500 mm	2	
Radial seal DA 12000	2598624	PTFE 550 mm	4	
Overheat protection OH1 DA 12000	2597846		2	
Overheat protection OH2 DA 12000	2597845		1	
Rotation guard sensor with magnet DA 12000	2597875		1	
Standard PLC 3.5" (spare part) incl.standard software	2597879		1	

11 Component data

11.1 Component data Condair DA 4400

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
Fans				
Manufacturer		ZiehlAbegg or ebmpapst	ebmpapst	
Fan type		GR31C-ZID.GG.CR or K3G310-PH58-02	R3G250-RR01-H1	
Motors				
Manufacturer		Ziehl-Abegg	ebmpapst	Rotek
Model		GR40C-ZID.GG.CR	M3G 084-DF	SGM65/30-4
Speed	min ⁻¹	4200	3740	3.0
Power	kW	3.9	0.5	7.8 W
Voltage	V	3x 380-480V	1x230V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	5.7	2.2	60 mA
Protection class	IP	F	F	
Insulation class	ISO	F	F	
Rotor				
Type				Rotor 4400
Filters				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO coarse 65 %	ISO coarse 65 %	
Filter media		Glass fibre	Glass fibre	
Dimensions	mm	2pcs. 810 x 565 x 48	1pc. 650 x 535 x 48	
Pressure drop, clean filter	Pa	60	40	
Pressure drop, dirty filter	Pa	200	200	
Heating, reactivation air				
Power	kW		36	
Type			Resistance	
Voltage	V		400	
Number of heating elements			9	
Type of heating elements			Resistance	

11.2 Component data Condair DA 6400

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
Fans				
Manufacturer		Ziehl-Abegg or ebmpapst	ebmpapst	
Fan type		GR40C-ZID.GG.CR or K3G400PA2771	R3G280-AU11-C1	
Motors				
Manufacturer		Ziehl-Abegg or ebmpapst	ebmpapst	Rotek
Model		GR40C-ZID.GG.CR or K3G400PA2771	M3G084-GF	SGM65/30-4
Speed	min ⁻¹	2810 / 2750	3100	3,0
Power	kW	3.90 / 3.35	1.0	7,8 W
Voltage	V	3x 380-480V	3x 380-480V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	6.2-5.0	1.6	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
Rotor				
Type				Rotor 6400
Filters				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO coarse 65 %	ISO coarse 65 %	
Filter media		Glass fibre	Glass fibre	
Dimensons	mm	2pcs. 810 x 565 x 48	1pc. 650 x 535 x 48	
Pressure drop, clean filter	Pa	60	40	
Pressure drop, dirty filter	Pa	200	200	
Heating, reactivation air				
Power	kW		48	
Type			Resistance	
Voltage	V		400	
Number of heating elements			12	
Type of heating elements			Resistance	

11.3 Component data Condair DA 7400

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
Fans				
Manufacturer		Ziehl-Abegg or embpapst	Ziehl-Abegg or embpapst	
Fan type		GR50C-ZID.GQ.CR or VBH0450CTTPS	GR31C-ZID.DC.1R or K3G310-PH58-02	
Motors				
Manufacturer		Ziehl-Abegg	Ziehl-Abegg	Rotek
Model		MK152-ZID.24.UF	M3G084-GF	SGM65/30-4
Speed	min ⁻¹	2180	3550	3,0
Power	kW	5.6	2.2	7.8 W
Voltage	V	3x 380-480V	3x 380-480V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	8.8-7.0	3.6	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
Rotor				
Type				Rotor 7400
Filters				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO coarse 65 %	ISO coarse 65 %	
Filter media		Glass fibre	Glass fibre	
Dimensions	mm	2pcs. 810 x 565 x 48	1pc. 650 x 535 x 48	
Pressure drop, clean filter	Pa	60	40	
Pressure drop, dirty filter	Pa	200	200	
Heating, reactivation air				
Power	kW		60	
Type			Resistance	
Voltage	V		400	
Number of heating elements			15	
Type of heating elements			Resistance	

11.4 Component data Condair DA 9400

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
Fans				
Manufacturer		Ziehl-Abegg or embpapst	Ziehl-Abegg or embpapst	
Fan type		GR50C-ZID.GQ.CR or VBH0450CTTPS	GR31C-ZID.DC.1R or K3G310-PH58-02	
Motors				
Manufacturer		Ziehl-Abegg	Ziehl-Abegg	Rotek
Model		MK152-ZID.24.UF	RH31C-ZID.DC.1R	SGM65/30-4
Speed	min ⁻¹	2180	3550	3.0
Power	kW	5.6	2.2	7.8 W
Voltage	V	3x 380-480V	3x 380-480V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	8.8-7	3.6	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
Rotor				
Type				Rotor 9400
Filters				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO coarse 65 %	ISO coarse 65 %	
Filter media		Glass fibre	Glass fibre	
Dimensions	mm	2pcs. 810 x 565 x 48	1pc. 650 x 535 x 48	
Pressure drop, clean filter	Pa	60	40	
Pressure drop, dirty filter	Pa	200	200	
Heating, reactivation air				
Power	kW		72	
Type			Resistance	
Voltage	V		400	
Number of heating elements			18	
Type of heating elements			Resistance	

11.5 Component data Condair DA 12000

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
Fans				
Manufacturer		Ziehl-Abegg or ebmpapst	Ziehl-Abegg or ebmpapst	
Fan type		2 x GR40C-ZID.GG.CR or 2 x K3G400PA2771	GR31C-ZID.DC.1R or K3G310-PH38-02	
Motors				
Manufacturer		Ziehl-Abegg or ebmpapst	Ziehl-Abegg or ebmpapst	Rotek
Model		2 x GR40C-ZID.GG.CR or 2 x K3G400PA2771	GR31C-ZID.DC.1R or K3G310-PH38-02	SGM65/30-4
Speed	min ⁻¹	2750 / 2810	3250	3
Power	kW	2 x 3.35 / 2 x 3.9	1.8 / 2.2	7,8 W
Voltage	V	3 x 380-480	3 x 380-480	1 x 230
Frequency	Hz	50/60	50/60	50/60
Amps	A	6.2-5.0	3.6-2.2	60 mA
Protection class	IP	54	54	
Insulation class		F	F	
Rotor				
Type				Rotor 12000
Filters				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO Coarse 65 %	ISO Coarse 65 %	
Filter media		Glass fibre	Glass fibre	
Dimensons	mm	2 pcs. 810 x 565 x 45	1 pc. 650 x 535 x 45	
Pressure drop, clean filter	Pa	60	40	
Pressure drop, dirty filter	Pa	200	200	
Heating, reactivation air				
Power	kW		84 kW (36+24+24)	
Type			Resistance	
Voltage	V		400	
Number of heating elements			21	
Type of heating elements			Resistance	

12 EU declaration of conformity

EU declaration of conformity

Condair Group AG
Gwattstrasse 17
8808 Pfäffikon SZ
Switzerland

declare under own responsibility that the product:

Condair Dehumidifier DA 500, DA 700, DA 1000, DA 1400, DA 2400, DA 2400, DA 3400, DA 4000, DA 4400, DA 6000, DA 6400, DA 7400, DA 8000, DA 9400, DA 13000, DA 19000 and DA 27000 from unit no 128 1512

which is detailed in this declaration complies to the following harmonized European standards and technical specifications:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
EN 60204-1:2018	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 61000-6-3:2007/A1:2011/AC:2012	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
EN 61000-6-2:2005/C1:2005	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

according to conditions in directive:

2006/42/EC	Machinery Directive
2009/125/EC	Ecodesign requirements for fans driven by motors with an electric input power between 125 W and 500 kW
2014/30/EU	Electromagnetic Compatibility (EMC) Directive

Pfäffikon 2018-12-12

The manufacturer:



Condair Group AG
Robert Merki



13 Appendix 1 – electrical wiring diagram

The electrical wiring diagram for the desiccant dryer will be completed about 2 weeks before completion of the unit and is delivered together with the unit.

As every dehumidifier is uniquely manufactured to client specification the wiring diagram is unique to the particular unit consequently the specific electrical wiring diagram.

Notes

CONSULTING, SALES AND SERVICE:



CH94/0002.00

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